

WHAT IS CLAIMED IS:

1. An oxygen enriching apparatus which enriches oxygen contained in air to thereby obtain oxygen-enriched gas, and which supplies the oxygen-enriched gas to a user having a breathing cycle including an inhalation period and an exhalation period synchronously with inhalation of the user by
5 means of a breath synchronization function, which comprises:

an oxygen outlet for supplying the oxygen-enriched gas to an inhalator of the user, and a breath detection port connected to the inhalator for detecting the user's state of breathing.

2. The oxygen enriching apparatus as claimed in claim 1, which comprises means for supplying the oxygen-enriched gas at a first flow rate during the inhalation period of each breathing cycle and at a second flow rate during the exhalation period of each breathing cycle when breath-
5 synchronized operation is performed, wherein the first flow rate is greater than a continuous base flow rate representing a flow rate at which the oxygen enriching apparatus can supply the oxygen-enriched gas continuously, and the second flow rate is less than the continuous base flow rate.

3 The oxygen enriching apparatus as claimed in claim 1, which comprises means for supplying the oxygen-enriched gas at a third flow rate equal to or less than a continuous base flow rate when the breath-synchronized operation is not performed, which third flow rate represents a flow rate at

5 which the oxygen enriching apparatus can supply the oxygen-enriched gas continuously.

4. The oxygen enriching apparatus as claimed in claim 1, which comprises a sensor for detecting the user's state of breathing disposed on a flow passage reaching the breath detection port.

5. The oxygen enriching apparatus as claimed in claim 4, which comprises means for detecting the state of inhalation or exhalation by use of the sensor, and for controlling supply of the oxygen-enriched gas based on a signal output from the sensor.

6. The oxygen enriching apparatus as claimed in claim 4, which comprises means for detecting the state of inhalation or exhalation one time or a plurality of number of times based on a signal output from the sensor, and for determining the timing for starting or ending subsequent supply of the 5 oxygen-enriched gas based on the thus-detected state of inhalation or exhalation.

7. The oxygen enriching apparatus as claimed in claim 1, which comprises a main passage extending to the oxygen outlet and adapted to supply the oxygen-enriched gas thereto, said main passage comprising a control member for adjusting the opening of the main passage, and a bypass 5 flow passage for bypassing the control member.

8. The oxygen enriching apparatus as claimed in claim 7, which comprises a flow-rate adjuster provided in the bypass flow passage for adjusting the flow rate of the oxygen-enriched gas flowing through the bypass flow passage.

9. An oxygen enriching apparatus which enriches oxygen contained in air to thereby obtain oxygen-enriched gas and which supplies the oxygen-enriched gas to a user having a breathing cycle including an inhalation period and an exhalation period synchronously with inhalation of the user by 5 means of a breath synchronization function, which comprises

means for supplying the oxygen-enriched gas at a first flow rate during the inhalation period of each breathing cycle and at a second flow rate during the exhalation period of each breathing cycle when breath-synchronized operation is performed, wherein the first flow rate is greater than a continuous 10 base flow rate representing a flow rate at which the oxygen enriching apparatus can supply the oxygen-enriched gas continuously, and the second flow rate is less than the continuous base flow rate.

10. The oxygen enriching apparatus as claimed in claim 9, which comprises means for supplying the oxygen-enriched gas at a third flow rate equal to or less than a continuous base flow rate when the breath-synchronized operation is not performed, which third flow rate represents a flow rate at 5 which the oxygen enriching apparatus can supply the oxygen-enriched gas continuously.

11. The oxygen enriching apparatus as claimed in claim 2, wherein the inhalation period has a length 25 to 40% that of the user's breathing cycle.

12. The oxygen enriching apparatus as claimed in claim 9, wherein the inhalation period has a length 25 to 40% that of the user's breathing cycle.

13. The oxygen enriching apparatus as claimed in claim 2, wherein the continuous base flow rate is 4 liters/min or less.

14. The oxygen enriching apparatus as claimed in claim 9, wherein the continuous base flow rate is 4 liters/min or less.

15. The oxygen enriching apparatus as claimed in claim 1, which comprises a tank provided in an oxygen-enriched-gas supply passage on the downstream side of an oxygen enriching section, for accumulating oxygen-enriched gas supplied during the exhalation period of each breathing timing.

16. The oxygen enriching apparatus as claimed in claim 9, which comprises a tank provided in an oxygen-enriched-gas supply passage on the downstream side of an oxygen enriching section, for accumulating oxygen-enriched gas supplied during the exhalation period of each breathing timing.

17. The oxygen enriching apparatus as claimed in claim 1, which comprises a plurality of tanks provided in series in an oxygen-enriched-gas supply passage, on the downstream side of the oxygen enriching section, for stably supplying the oxygen-enriched gas.

18. The oxygen enriching apparatus as claimed in claim 9, which comprises a plurality of tanks provided in series in an oxygen-enriched-gas supply passage, on the downstream side of the oxygen enriching section, for stably supplying of the oxygen-enriched gas.

19. The oxygen enriching apparatus as claimed in claim 17, wherein each of two tanks connected in series has a capacity of at least 500 ml.

20. The oxygen enriching apparatus as claimed in claim 18, wherein each of two tanks connected in series has a capacity of at least 500 ml.

21. The oxygen enriching apparatus as claimed in claim 17, which comprises a check valve for preventing reverse flow toward the oxygen enriching section disposed between the plurality of tanks.

22. The oxygen enriching apparatus as claimed in claim 18, which comprises a check valve for preventing reverse flow toward the oxygen enriching section disposed between the plurality of tanks.

23. The oxygen enriching apparatus as claimed in claim 3, which comprises a switch for setting a flow rate of the oxygen-enriched gas, when the flow rate is set by use of the switch to a third flow rate equal to or less than the continuous base flow rate, the oxygen enriching apparatus supplies the

5 oxygen-enriched gas continuously, and when the flow rate is set by use of the switch to the first flow rate greater than the continuous base flow rate, the oxygen enriching apparatus supplies the oxygen-enriched gas by means of the breath-synchronized operation.

24. The oxygen enriching apparatus as claimed in claim 10, which comprises a switch for setting a flow rate of the oxygen-enriched gas, when the flow rate is set by use of the switch to a third flow rate equal to or less than the continuous base flow rate, the oxygen enriching apparatus supplies the 5 oxygen-enriched gas continuously, and when the flow rate is set by use of the switch to the first flow rate greater than the continuous base flow rate, the oxygen enriching apparatus supplies the oxygen-enriched gas by means of the breath-synchronized operation.

25. A controller for controlling operation of the oxygen enriching apparatus claimed in claim 1.

26. A controller for controlling operation of the oxygen enriching apparatus claimed in claim 9.

27. A recording medium having recorded thereon means for executing the function of the controller claimed in claim 25.

28. A recording medium having recorded thereon means for executing the function of the controller claimed in claim 26.